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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/954,715	09/12/2001	Ping-Sheng Tseng	16503-302504	8847

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EXAMINER	
SAXENA, AKASH	
ART UNIT	**PAPER NUMBER**
2128	

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/954,715	TSENG ET AL.	
	Examiner	Art Unit	
	Akash Saxena	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 September 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claim(s) 1-50 has/have been presented for examination based on amendment filed on 28th September 2005.
2. Claim(s) 1, 4, 7-11, 14, 16-17, 26 and 40 are amended.
3. Previous non-final office action mailed on 16th June 2005 is incorporated within this office action unless otherwise specified where the more current rejection for the amended claims supercedes the previous rejection.
4. The arguments submitted by the applicant have been fully considered. Claims 1-50 remain rejected. The examiner's response is as follows.

Response to Applicant's Remarks & Examiner's Withdrawals

5. Examiner respectfully withdraws the objection(s) to drawings (Fig. 65-69) in view of the amendment to drawings.
6. Examiner respectfully withdraws the claim objection(s) to claim 4 in view of the amendment. Objection to claim 8 is maintained. Please see details in 35 USC 112 rejections.
7. Examiner respectfully withdraws the claim rejection(s) under 35 USC § 112 to claim(s) 1, 8-9, 26 in view of the amendment. Rejections to claim 7-9, 10-18 are maintained. Please see details in 35 USC 112 rejections.

Response to Applicant's Remarks for 35 U.S.C. § 102

8. Claims 1-6, 19-36, 38 & 44-46 were rejected under 35 U.S.C. 102(b) as being anticipated by BH'900.

Regarding Claim 1, 19, 24, 30, 33, 38 and 40

Applicant has argued that BH'900 does not teach a shared memory that stores information for both a "software model" and a "hardware model".

Examiner respectfully disagrees. It is well established in the art of simulation that most simulations are either event based or time step based (clocked) defining the trigger point where all inputs and outputs are sampled, evaluated and stored. In a hardware-software simulation where the part of the system is emulated in hardware (FPGA, PLD etc) and rest is simulated in software, it is critical that hardware emulation and software simulation communicate to effectively at either event basis or time basis. The bidirectional communication must happen through some shared resource where the information related to software models can be communicated to hardware models and vise versa. These shared resources are simply a some storage resource (memory, database or flat text file etc). It is well known that without this shared resource for communication between hardware emulation and software simulation is not possible to execute successful hardware-software simulation. Further, shared memory as defined by Microsoft Computer Dictionary is "a memory accessed by more than one program in a multitasking environment; a portion of memory used by parallel processor computer systems to exchange information."

Although BH'900 does not explicitly cite phrase "shared memory", the BH'900 reference, as cited in the previous office action, teaches that memory is shared between the "hardware model" (taught as "prototype definition") which is downloaded from the system (memory) to the reconfigurable board (BH'900: Col.2 Line 64-Col.3 Line 5) and the simulator, having "software models" (BH'900: Fig.1 Elements 16 & 32). The "software models" is running on the same system connected the reconfigurable board. Further, BH'900 discloses close interaction between the hardware model (on the board) and software model (executed by the simulator) provided through Leapfrog, commercially available software from Cadence Design Systems (BH'900: Col.3 Lines 6-21). BH'900 therefore anticipates the shared memory limitation.

It is also noted that, shared memory as defined by *Microsoft Computer Dictionary* as "*a memory accessed by more than one program in a multitasking environment; a portion of memory used by parallel processor computer systems to exchange information.*"

BH'900 teaches a multi-simulator environment (BH'900: Col.3 Lines 6-21), thereby inherently using shared memory.

Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references. Further, Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he

or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections. Applicant's argument regarding inherency are considered and are found to be unpersuasive.

Rejection to dependent claims 2-6, 20-23, 25-29, 31-36 and 45-46 is maintained based on their direct or indirect dependency from claims 1, 19, 24, 30, 33, 38 and 40.

Response to Applicant's Remarks for 35 U.S.C. § 103

9. Claim(s) 7 & 10 were rejected under 35 U.S.C. 103(a) as being unpatentable over BH'900, in view of RO'1988.

   Regarding Claim 7 & 10

   Applicant has argued that neither BH'900 nor RO'1988 teaches a "shared memory". Examiner respectfully disagrees with the applicant. BH'900 clearly & inherently teaches a shared memory. Please see 35 USC 102(b) rejection above. Applicant's argument regarding establishing a prima facie case of obviousness are considered and are found to be unpersuasive, since the shared memory limitation is rendered obvious by BH'900 using the reasons cited above.

10. Claim(s) 8-9 and 11-18 were rejected under 35 U.S.C. 103(a) as being unpatentable over BH'900, in view of RO'1988, further in view of VA'1997.

    Regarding Claim 8-9 and 11-18

    Applicant has argued that neither BH'900-RO'1988 nor VA'1997 teaches a "shared memory". Examiner respectfully disagrees with the applicant. BH'900 clearly & inherently teaches a shared memory. Please see 35 USC 102(b) rejection above. Applicant's argument regarding establishing a prima facie case of obviousness are considered and are found to be unpersuasive, since the shared memory limitation is rendered obvious by BH'900 using the reasons cited above.

11. Claim 37 was rejected under 35 U.S.C. 103(a) as being unpatentable over BH'900, in view of BU'662.

Regarding Claim 37

Applicant has argued that neither BH'900 nor BU'662 teaches a "shared memory". Examiner respectfully disagrees with the applicant. BH'900 clearly & inherently teaches a shared memory. Please see 35 USC 102(b) rejection above. Applicant's argument regarding establishing a prima facie case of obviousness are considered and are found to be unpersuasive, since the shared memory limitation is rendered obvious by BH'900 using the reasons cited above.

12. Claim(s) 39-43 and 47-50 were rejected under 35 U.S.C. 103(a) as being unpatentable over BH'900, in view of BI'1997.

Regarding Claim 39-43 and 47-50

Applicant has argued that neither BH'900 nor BI'1997 teaches a "shared memory". Examiner respectfully disagrees with the applicant. BH'900 clearly & inherently teaches a shared memory. Please see 35 USC 102(b) rejection above. Applicant's argument regarding establishing a prima facie case of obviousness are considered and are found to be unpersuasive, since the shared memory limitation is rendered obvious by BH'900 using the reasons cited above.

Specification

13. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Amendment was made to change "transmission logic" to "selection logic". Neither claim language nor the specification defines what is to be interpreted as "selection logic". Claims 12-18 are rejected based on their dependency on claim 11.

Claim Rejections for amended claim - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 1, 4, 26 were previously rejected under 35 U.S.C. 102(b) as being anticipated by BH'900.

Regarding Claims 1 & 4

Amendment to claims 1 &4 do not add any new limitation. Rejection provided in the previous office action is incorporated here with the Response to Applicant's Remarks for 35 U.S.C. § 102 above.

Regarding Claim 26

BH '900 teaches simulating the software model by using the state information (BH '900: Col.1 Lines 29-35) from hardware model in the shared memory (BH '900: Col.3 Lines 2-5, 36-43). Amendment to the claim does not change the response as the behavior of the circuit is the characteristic that being simulated by BH '900.

Claim Rejections for Amended Claims - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15. Claim(s) 7 & 10 were rejected under 35 U.S.C. 103(a) as being unpatentable over BH'900, in view of RO'1988.

Regarding Claim 7 & 10

Rejection provided in the previous office action is incorporated here with the Response to Applicant's Remarks for 35 U.S.C. § 103 above. The new limitation from claim 7, "*at least one* latch" and claim 10, "at least one flip-flop" are still taught by the prior art combination teaches the limitation for each latch and flip-flop.

16. Claim(s) 8-9 and 11-18 were rejected under 35 U.S.C. 103(a) as being unpatentable over BH'900, in view of RO'1988, further in view of VA'1997.

Regarding Claim 8

Rejection provided in the previous office action is incorporated here with the Response to Applicant's Remarks for 35 U.S.C. § 103 above. The amended limitation "first trigger input", provided as clarification to 35 USC 112 for claim 8, is still taught by the prior art (VA '1997: Fig.5 Clock - first trigger input).

Regarding Claim 9

Rejection provided in the previous office action is incorporated here with the Response to Applicant's Remarks for 35 U.S.C. § 103 above. The amended limitation "new value of first data" provided in claim 9 is still taught by the prior art in as a third logic storing the new value (VA '1997: Fig.5: Output Logic).

Regarding Claim 11, 14, 16 and 17

VA '1997 teaches a selection logic (VA '1997: Fig.5: Output Logic) coupled to the input logic and storage logic for selecting between the new and old values and outputting it.

17. Claim 40 was rejected under 35 U.S.C. 103(a) as being unpatentable over BH'900, in view of BI'1997.

Regarding Claim 40

Rejection provided in the previous office action is incorporated here with the Response to Applicant's Remarks for 35 U.S.C. § 103 above. The amended limitation "inter bus system *wherein* the computing system has [...]",does not include any new limitation that was not rejected in the previous response. Effect of "wherein" only limits the scope further, that is still taught by the prior art.

Conclusion

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Akash Saxena whose telephone number is (571) 272-8351. The examiner can normally be reached on 9:30 - 6:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini S. Shah can be reached on (571)272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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